

**DRAFT Questions and Answers during Arkema Presentation  
Portland Harbor Community Advisory Group  
February 13, 2008**

TS – Todd Slater, Legacy Site Services for Arkema  
SS – Sean Sheldrake for EPA  
MM – Matt McClincy for DEQ

**What are the issues being disputed between Arkema and EPA?**

TS– Technology evaluation and various technologies such as dredging and whether to take off site or dispose of on-site

SS – Specifically Arkema would wants to evaluate a near-shore or in-water CDF option.

**What chromium levels are currently reaching the river from the uplands?**

TS – Chromium levels at the riverbank wells are meeting the remedial action objectives (RAOs) of the treatment project.

MM – ~~The levels being discharged meet DEQ ambient levels~~ In this case the RAOs would have been Ambient Water Quality Criteria

**What are the options for the discharge of treated groundwater?**

TS – One of the options we are looking at is reinjection into the perchlorate areas

**Would GW options change between the partial and full barrier wall?**

Yes.

**How does biological reduction of perchlorate work?**

It breaks down into chlorine, CO<sub>2</sub>, and H<sub>2</sub>O.

**What do the colors on the slides mean in terms of the problems/risk caused by DDT?**

SS – All the levels that show up on the slides across the Arkema facility are high from a risk standpoint—many orders of magnitude above the highest literature risk values (probable effects concentrations).

**Once the planning is done, how long will it take to dredge out all the contamination?**

TS – Two fish windows (two years) at a minimum

Are you going to tell us more about Arkema's CDF proposal? EPA does not know the details of Arkema's CDF proposal. Put simply, EPA does not believe the CDF has technical merit for evaluation in the Arkema EE/CA process and will delay the project unnecessarily; EPA has therefore screened the option out from further consideration. Arkema is reportedly disputing this.

**Will more DDT come to the site from upstream? (and in what concentrations?)**

It is possible that recontamination will occur from the upstream, mostly at lower levels. Discussed background levels of DDT and color coding on Round 2 Maps. [However, the Arkema project is intended to primarily remove contamination from the site and leave a temporary cap. As such, recontamination from upstream will not be an issue until the “final” cap is placed later in the process.](#)

**Where are the other DDT spots on the river and how do they compare to Arkema?**

Gunderson. Arkema is larger. Recontamination and other places on the river are an issue for the LWG. [Arkema is the DDT hotspot in the Willamette River.](#)

**When dredging happens, will the site be protected by a rigid barrier wall?**

That level of detail will be presented in the EECA. [It is EPA’s goal to present a plan with rigorous dredging controls, such as clamshell dredging with rigid \(e.g. sheet pile\) containment to control residual contaminant dissemination into the Harbor. Poor control over residuals could impact uptake into fish tissue; however, not dealing with this hotspot would likely allow redistribution of contaminants from future uses, such as propeller wash.](#)

**\*The CAG has an issue with the type of dredging methods and technology that are used.**

TS – Referred to handout with the USACE 4R’s of dredging and discussed how dredging was done on the Hylebos waterway in Commencement Bay with an environmental bucket and no containment. [SS pointed out that the Willamette River is different and the contaminants at this site are too high to risk dredging without containment. SS also pointed out the “environmental” bucket will not close when encountering the debris which is very common off channel in the Willamette, and can distribute more contaminants into the river than the clamshell in such a scenario.](#)

Success in controlling contaminants during dredging is affected by things like production rates or debris.

**What were sampling turn around times on the Hylebos?**

An on-site lab was used and turn around times were often a day or less.

**Do you plan to remove the docks during the Arkema cleanup?**

This will be evaluated during the EECA. There may be other ways to get at the contamination. Arkema is open to sheet pile and cofferdam use – these will be evaluated in the EECA.

**Can you explain what an environmental bucket is?**

A bucket that closes completely so that the contents are not spilled when it is raised. SS noted that at GASCO, the properties of the tar prevented an environmental bucket from working. [much as debris will prevent an environmental bucket from functioning properly.-](#)

**Would dredging equipment use non-petroleum oils?**

Arkema encourages contractors to use sustainable products.

**How deep would you have to dredge to get the contamination at the 10 mg/kg level?**

Judy I think the 2 to 20 foot response was the answer to how deep is the basalt. The statement was made by David Livermore.

TS – Down to the basalt layer, generally between 2 – 20 feet

**Will this meet EPA cleanup goals?**

SS – We are working with the LWG to set the preliminary remediation goals (PRG's). The Probable Effects ~~Threshold Concentration~~ (PECT) is in the neighborhood of 40 PPB for fish/eco risk (My note: We didn't do a very good job of describing the relationship between PPB and mg/kg)

**What would the target be for this early action?**

EPA would like to dig out contaminants to the limits of dredging, to ensure that any area where dredging is undertaken is completely addressed by this action, and further dredging will not be necessary (for the area that had been dredged). To screening levels. It would be nice to be done with the hot spot area.

**Would DDT contaminated soils be considered for an in-water CDF?**

SS – The position of EPA staff is that the CDF is not appropriate at this site if the level of analysis is for a removal action. It will take extra years of analysis, will make holding a CDF to performance standards virtually impossible due to collocated upland contamination, and in the end may require treatment to be protective, also adding at least a year to the removal process. For these reasons EPA screened this alternative out as being inappropriate for this removal action. We will reach engineering limits before ROD protective levels are reached.

**It seems counterintuitive to clean up a hot spot and then have to come back.**

SS -There are so many seasons of work in the river that it makes sense to control the hottest areas first. There are many seasons of work to be done at this site—there is no possible way to do all the work needed in one summer.

**Is the site so contaminated that it should be left alone forever?**

SS - There are things that need to be done in water such as capping or armoring future berth sites. No; the site is so contaminated that it cannot be left in the river. Future uses such as berthing ships would certainly resuspend and redistribute this contamination in the future—contaminating costly cleanups elsewhere in the Harbor at that time. It is crucial to clean up this hot spot before other PRPs invest in cleanups throughout the harbor and risk recontamination from lack of action at Arkema.

**Would DDT contamination be a candidate for a sediment treatment plant? Perhaps; this is being looked at by the Harborwide RI/FS.**

**What is the risk from letting it sit there undisturbed versus cleaning it up and possibly spreading it around?**

SS – If this material was spread around the harbor it would cause bioaccumulation risk to fish. EPA advocates barrier wall containment.

TS – Mentioned the 4 R's of sediment contamination earlier, the 5<sup>th</sup> is reality. Cleanup can't be perfect and it may spread the stuff around.

The cleanup will only spread residuals around if containment is not used. The risk of leaving the material in place far outweighs the risk of cleaning the harbor up in sequence, which involves dredging hot spots out first.

**Does the contamination extend all the way to the basalt or is there clean sediment below the contamination?**

It is contaminated all the way to bedrock.

**Will the docks have to come out?**

Highly likely. The setbacks for protecting a structure like a dock are pretty severe and it would create a cost prohibitive level of institutional controls.

TS – There is no where along the river that would meet screening values

**Is there any way to do forensic DDT work to tell where it comes from?**

No. Not from the chemical signature. CHIP HAS MORE INFORMATION ON THIS....

**Isn't a full containment upland barrier wall just like the Mc and Bax solution?**

There are similarities in the upland barrier wall and capping to keep contaminants from migrating to the river. However the constituents are different.

**What will the groundwater model be used for?**

**Did Arkema flood in 1996?**

It came up the bank, but not into the plant.

**Are there any chemicals on the property that have not been analyzed?**

**What will determine whether a full or partial containment wall will be used?**

TS – Pump and flow rates

**How deep is it from the surface down to the basalt layer?**

**Will the engineering work take earthquake and global warming into consideration?**

**If a CDF is used would it be impermeable?**

An upland disposal site would be possible with the appropriate engineering controls

SS – Any CDF option should be evaluated in the harbor wide RI/FS, not an EECA. We learned this from T4, the issues and treatment questions will be in the RI/FS. Given that these issues could not be solved at a less complex site like T4, for a more highly contaminated site like Arkema with a history of dispute this would introduce further delay to a project already behind schedule. The LWG FS will be done in 2009

**\*Jim Robison, CAG Chair - Arkema should understand that there is not support for a CDF. CAG membership does not feel this is appropriate for an early action.**

**Would a CDF be temporary?**

There would be many questions and concerns to be resolved to make it work. EPA is OK with an upland disposal site ([per EPA guidance a CDF is an inwater facility, not an upland facility; Arkema referenced USACE guidance, but as this is not a USACE project, it is appropriate to use EPA terminology to avoid confusion](#)), but in water and near shore have more complexity than should be planned in an early action.

**If I remember correctly from T4, for an in-water facility permission would be needed from the state land board. [This is the tip of of the iceberg. FEMA maps may have to be redrawn as well due to channel flow impact, etc. NMFS would require a level of mitigation that would be cost prohibitive. The list goes on.](#)**

TS – Arkema does not feel it is appropriate to evaluate only one option.

SS – An EECA by definition at focused and streamlined effort. Contaminated material would have to be treated before it could even be considered for CDF disposal [requiring years of treatability testing.](#) -

**How does this site compare to Gunderson?**

SS – Gunderson is smaller. Arkema is a higher priority. [Arkema is one of the worst sites on the Willamette, and needs to be cleaned up as soon as possible.](#)

**Has Arkema seen the Golder Report done for T4, which evaluated flood and earthquake?**

No. There are only so many things you can do with contaminated sediment.

SS –EVS is on the EPA Arkema web site.

**Should people walk away from the Arkema site forever because of contamination or will it be a Brownfield to be redeveloped?**

SS - Redevelopment is desirable. However, an upland landfill might limit redevelopment options.

DL – It is Arkema's intent to eventually return the property to productive industrial or commercial use.